

Docket No.: HO-P02894US0
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Per Andersson et al.

Application No.: 10/715,897

Confirmation No.: 1386

Filed: November 18, 2003

Art Unit: 1743

For: Microfluidic Device

Examiner: Handy, Dwayne

APPEAL BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

As required under § 41.37(a), this brief is filed in furtherance of the Notice of Appeal filed November 7, 2006.

The fees required under § 41.20(b)(2) are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief contains items under the following headings as required by 37 C.F.R. § 41.37 and M.P.E.P. § 1206:

I.	REAL PARTY IN INTEREST	3
II.	RELATED APPEALS, INTERFERENCES, AND JUDICIAL PROCEEDINGS	3
III.	STATUS OF CLAIMS	3
	A. Total Number of Claims in Application	3
	B. Current Status of Claims	3
	C. Claims On Appeal	4
IV.	STATUS OF AMENDMENTS	4
V.	SUMMARY OF CLAIMED SUBJECT MATTER	4
VI.	GROUND OF OBJECTION TO BE REVIEWED ON APPEAL	5
	A. Whether Claims 1-3 and 7-12 were properly rejected under 35 U.S.C. § 102(e) as being anticipated in view of McNeely et al. (US 6,591,852).	5
	B. Whether Claims 4-6 were properly rejected under 35 U.S.C. § 103(a) as being unpatentable over McNeely et al. (US 6,591,852) in view of Kellogg et al. (US 6,063,589)	5
VII.	ARGUMENT	5
	A. Issues Under 35 U.S.C. § 102(e) Claim Rejections	5
	B. Issues Under 35 U.S.C. § 103(a) Claim Rejections	7
VIII.	CLAIMS	7
IX.	EVIDENCE	7
X.	RELATED PROCEEDINGS	7
	APPENDIX A	9

I. REAL PARTY IN INTEREST

The real party in interest for this appeal is Gyros Patent AB.

II. RELATED APPEALS, INTERFERENCES, AND JUDICIAL PROCEEDINGS

There are no other appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

A. Total Number of Claims in Application

Claims 1-12 were originally filed with the application on November 18, 2003. The application is a continuation-in-part application of U.S. Patent Application Serial Number 10/621,868, filed July 17, 2003, which is a continuation of U.S. Patent Application Serial Number 09/811,741, filed March 19, 2001; and is a continuation-in-part of U.S. Patent Application Serial Number 09/674,457, filed January 5, 2001, which claims priority to PCT Application Number PCT/IB99/00907, international filing date May 7, 1999.

B. Current Status of Claims

An Office Action mailed November 21, 2005 rejected claims 1-12. Appellant filed a response on May 22, 2006. No claim amendments were made and no claims were canceled by the Appellant. A Final Office Action mailed August 10, 2006 maintained the rejection of claims 1-12. A Notice of Appeal was filed by the Appellants on November 7, 2006.

In summary, the current status of the claims are as follows:

1. Claims canceled: 0
2. Claims amended: 0
3. Claims withdrawn from consideration but not canceled: 0
4. Claims pending: 1-12

5. Claims allowed: 0

6. Claims rejected: 1-12

C. Claims On Appeal

The claims on appeal are the original claims 1-12. No claim amendments have been made.

IV. STATUS OF AMENDMENTS

Appellant did not file an Amendment After Final Rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Paragraph numbers refer to the published application 20040099310. The presently claimed invention of independent claim 1 relates to a device for metering a microfluidic plug of fluid from a larger fluidic volume. The device comprises a trunk channel that has a fluidic inlet and outlet (paragraphs 102-105; figure 8) and a microfluidic branch channel that is in direct, independent fluid communication with the trunk channel and comprises a fluidic impedance region (paragraphs 102-105; figure 8). The trunk channel, branch channel, fluidic inlet, fluidic outlet and fluidic impedance region are arranged in such a manner that a fluid is supplied through the trunk channel to fill the branch channel to the fluidic impedance region (paragraphs 102-105; figure 8). The fluidic contents of the trunk channel are flushed through the fluidic outlet while the branch channel remains substantially filled (paragraphs 104-105; figure 8). Thus, the trunk channel can be separately emptied or flushed with a first liquid or fluid while fluid is withheld in the branch channel (paragraphs 102-105; figure 8).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

- A. Whether Claims 1-3 and 7-12 were properly rejected under 35 U.S.C. § 102(e) as being anticipated by McNeely et al. (US 6,591,852).
- B. Whether Claims 4-6 were properly rejected under 35 U.S.C. § 103(a) as being unpatentable over McNeely et al. (US 6,591,852) in view of Kellogg et al. (US 6,063,589).

VII. ARGUMENT**A. Issues Under 35 U.S.C. § 102(e) Claim Rejections**

Claims 1-3 and 7-12 were rejected under 35 U.S.C. § 102(e) as being anticipated by McNeely et al. (US 6,591,852).

Anticipation of a claim is only established where “each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

McNeely shows that channel 2 fills up to the valve/impedance region b with no liquid passing the valve/impedance region a (FIG. 2B). However, upon further increase of the liquid pressure, the liquid will pass region a in filling channel 1 (FIG. 2C). When the liquid in channel 1 reaches region b (FIG. 2D), the valve function at this region is destroyed and liquid from both channel 1 and channel 2 flow downstream of region b in channel 1 and, hence mixing is accomplished. See also col. 14, lns. 1-38. The Office Action mailed 8/10/2006 states that this configuration meets the limitations of independent claim 1. However, Appellants assert that McNeely does not teach each limitation of the pending claim, which is inserted below:

A device for metering a microfluidic plug of fluid from a larger fluidic volume, the device comprising:

 a trunk channel having a fluidic inlet and a fluidic outlet;
and

a microfluidic branch channel in direct, independent fluid communication with the trunk channel, the branch channel having a fluidic impedance region;

wherein the trunk channel, branch channel, fluidic inlet, fluidic outlet, and fluidic impedance are arranged to permit a first fluid to be supplied through the trunk channel to fill the branch channel to the fluidic impedance region, and thereafter to permit the fluidic contents of the trunk channel to be flushed through the fluidic outlet while the branch channel remains substantially filled.

Claim 1 requires that the branch channel remains substantially filled while the liquid in the trunk channel is flushed. The function of the branch (channel 2) and trunk channel (channel 1) described by McNeely does not meet this requirement; in fact, it is an objective of McNeely that the branch and trunk channels are both filled at one point so that the liquid in both of them can enter channel 1 in parallel thereby permitting mixing downstream of region b. This is **opposite** of the presently invention that requires that the trunk channel can be separately emptied with a first liquid while liquid is withheld in the branch channel. This functionality is not possible with the design of McNeely in which the impedance/valve function at region b is destroyed when the liquid reaches the region via channel 1. A functional limitation must be evaluated and considered, just like any other limitation of the claim, for what it conveys to a person skilled in the art. See MPEP 2173.05g. For example, the courts have held that a functional limitation is acceptable because it can set definite boundaries on the patent protection sought. *In re Barr*, 444 F.2d 588, 170 USPQ 33 (CCPA 1971). Thus, the functional limitation of claim 1 provides patentable weight, which should be considered. See *e.g.*, *In re Ludtke*, 444 F.2d 660, 169 USPQ 563, 566 (CCPA 1971); *In re Swinehart*, 439 F.2d 210, 169 USPQ 226, 228-29 (CCPA. 1971); and *In re Barr*, 444 F.2d 588, 170 USPQ 33 (CCPA 1971).

Yet further, Appellants contend that the Examiner has overlooked the claim preamble. A claim preamble provides patentable weight if when read in the context of the entire claim, recites limitations of the claim, or, if the claim preamble is 'necessary to give life, meaning, and vitality' to the claim, then the claim preamble should be construed as if in the balance of the claim. See *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165-66

(Fed. Cir. 1999). *See also Jansen v. Rexall Sundown, Inc.*, 342 F.3d 1329, 1333, 68 USPQ2d 1154, 1158 (Fed. Cir. 2003). The claim preamble of the pending claims indicate that the claims relate to a device for metering a microfluidic plug of fluid from a larger fluidic volume. McNeely et al. does not teach a device for metering fluids. The devices taught in McNeely et al. relate to devices to enhance fluidic mixing or splitting a sample into multiple chambers or samples. *See* McNeely et al. col. 13, lns. 55-60. This is not equivalent to metering a plug of fluid as presently claimed in which the substantially filled branch channel is the metered plug. Thus, Appellants request that the claim preamble be considered since the claimed device performs a function in which the prior art device is not capable of performing.

B. Issues Under 35 U.S.C. ' 103(a) Claim Rejections

Claims 4-6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over McNeely et al. (6,591,852) in view of Kellogg et al. (6,063,589). Appellants traverse.

Since independent claim 1 is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. Thus, dependent claims, which incorporate all the limitations of independent claim 1, are nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Appellants respectfully request that the rejection be withdrawn.

VIII. CLAIMS

A copy of the claims involved in the present appeal is attached hereto as Appendix A.

IX. EVIDENCE

No evidence pursuant to §§ 1.130, 1.131, or 1.132 or entered by or relied upon by the examiner is being submitted.

X. RELATED PROCEEDINGS

No related proceedings are referenced in II. above, or copies of decisions in related proceedings are not provided, hence no Appendix is included.

Application No.: 10/715,897

Docket No.: HO-P02894US0

Dated: April 5, 2007

Respectfully submitted,

By /Melissa W. Acosta/
Melissa W. Acosta
Registration No.: 45,872
FULBRIGHT & JAWORSKI L.L.P.
2200 Ross Avenue, Suite 2800
Dallas, Texas 75201
(214) 855-7163
(214) 855-8200 (Fax)
Agent for Applicant

APPENDIX A

Claims Involved in the Appeal of Application Serial No. 10/715,897

1. A device for metering a microfluidic plug of fluid from a larger fluidic volume, the device comprising:

a trunk channel having a fluidic inlet and a fluidic outlet; and

a microfluidic branch channel in direct, independent fluid communication with the trunk channel, the branch channel having a fluidic impedance region;

wherein the trunk channel, branch channel, fluidic inlet, fluidic outlet, and fluidic impedance are arranged to permit a first fluid to be supplied through the trunk channel to fill the branch channel to the fluidic impedance region, and thereafter to permit the fluidic contents of the trunk channel to be flushed through the fluidic outlet while the branch channel remains substantially filled.
2. The device of claim 1, further comprising a plurality of sub-branch channels in fluid communication with the microfluidic branch channel.
3. The device of claim 1, further comprising a plurality of microfluidic branch channels, each in direct, independent fluid communication with the trunk channel.
4. The device of claim 1, wherein the microfluidic branch channel has a volume of less than about two microliters.
5. The device of claim 1, wherein the microfluidic branch channel has a volume of less than about one microliter.
6. The device of claim 1, wherein the microfluidic branch channel has a volume of less than about five hundred nanoliters.
7. The device of claim 1, wherein the fluidic impedance region comprises a passive valve.

8. The device of claim 1, wherein the branch channel has an associated gas-permeable vent.
9. The device of claim 1, wherein the trunk channel is a microfluidic channel.
10. The device of claim 1, further comprising multiple microfluidic branch channels each in independent, direct fluid communication with the trunk channel.
11. The device of claim 1, wherein the device is fabricated with a plurality of device layers.
12. The device of claim 1, wherein any device layer of the plurality of device layers is fabricated with a polymeric material.